Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Previously Presented) A scintillator assembly, comprising:

an array of scintillator material comprising plural pixels of separated scintillator material, each having outer surfaces of a first shape, and a bridge formed of uncut scintillator material between said pixels, holding together the plural separated pixels in a specified geometry; and

a preformed reflector formed of polyethylene, further comprising titanium dioxide as an additive to said polyethylene, having plural inner surfaces which each mate with said array of plural separated pixels,

and wherein said bridge has specified surfaces between the pixels that hold said array of scintillator material of said array at least partly within said pre-formed reflector.

2. (Previously Presented) An assembly as in claim 1, wherein said preformed reflector is a two dimensional array of pixels of said scintillator material with said bridge being uncut scintillator material between the pixels that two-dimensionally holds the pixels together, and said surfaces of said uncut

scintillator material forming said bridge two dimensionally holds said scintillator material within said preformed reflector.

3. (Previously presented) An assembly as in claim 1, further comprising an adhesive material, bonding said scintillator material within said pre-formed reflector.

4. (Original) An assembly as in claim 2, further comprising ridges within said preformed reflector, holding said scintillator material within said preformed reflector.

5. (Original) An assembly as in claim 1, further comprising an opening in the preformed reflector, at a specified location, corresponding to a specified location on the scintillator material.

6. (Previously presented) An assembly as in claim 5, wherein said opening is at a location of an exit window on the scintillator material.

7. (Original) An assembly as in claim 5, wherein said opening is at a location of a light guide input to or output from the

scintillator material.

8. (Canceled).

9. (Previously Presented) A scintillator assembly, comprising:

a scintillator material, having outer surfaces of a first shape; and

a preformed reflector, having inner surfaces which mate with said first shape to contain said scintillator material at least partly within said pre-formed reflector, said reflector formed to leave at least one air gap between a wall of the reflector and a surface of the scintillator material, further comprising a protrusion formed as a part of said inner surfaces of said preformed reflector, said protrusion forming a spacer to form said air gap.

10. (Canceled).

11. (Original) An assembly as in claim 1, further comprising a plurality of openings in the pre-formed reflector, at locations of a plurality of exit faces for the scintillator material.

12. (Original) An assembly as in claim 1, wherein the pre-formed

reflector is formed of multiple pieces.

13. (Previously presented) The scintillator assembly of claim 1, in which said first shape has an exit window smaller than the area of a face of the pixel upon which said exit window is defined.

14. (Previously presented) The scintillator assembly of claim 1, in which said first shape is other than a rectangular parallelepiped.

15. (Canceled) .

16. (Previously presented) A scintillator assembly, comprising:

an array of scintillator material comprising plural pixels of separated scintillator material, each having outer surfaces of a first shape, and a bridge, holding together the plural separated pixels in a specified geometry; and

a preformed reflector formed of polyethylene, having plural inner surfaces which each mate with said array of plural separated pixels, to contain each of said pixels of scintillator material of said array at least partly within said pre-formed reflector, at least one scintillator pixels of said array

comprises at least one material differing from a second material of another scintillator pixels.

17. (Previously Presented) The scintillator assembly of claim 1, in which said first shape forms a tapered end part that is tapered in two separate directions, and mates with, and is held in place by, corresponding surfaces on said preformed reflector, where said taper causes said shape to vary in cross¬sectional area in two directions.

18. (Previously Presented) The scintillator assembly of claim 1, in which said scintillator materials has at least one exit face that is not perpendicular to adjacent sidewalls of the material.

19. (Previously presented) The scintillator assembly of Claim 1, in which said preformed reflector is sufficiently flexible to permit insertion of said scintillator material by press fitting.

20. (Original) The scintillator assembly of claim 1, further comprising at least one optical fiber inserted into said scintillator material.

21. (Original) The scintillator assembly of claim 20, in which said optical fiber is used for wavelength shifting.

22. (Previously presented) The scintillator assembly of claim 9, further comprising at least one optical fiber inserted into or passing through said at least one air gap between one or a plurality of said units and said reflector.

23. (Original) The scintillator assembly of claim 22, in which said at least one optical fiber is used for wavelength shifting.

24. (Previously presented) The scintillator assembly of claim 1, further comprising a scintillator material as an additive to the reflector material of said preformed reflector.

25. (Previously presented) A scintillator assembly of claim 9, wherein the reflector is formed of polyethylene with a titanium dioxide additive.

26. (Previously presented) The scintillator assembly of claim 9, wherein the reflector is formed of polyethylene.

27-28. (Canceled) .

29. (Previously presented) The scintillator assembly of claim 1, in which one or a plurality of organic optical brightening agents is an additive to the polyethylene reflector.

30-31. (Canceled) .

32. (Previously presented) The scintillator assembly of claim 1, in which at least one of aluminum oxide, aluminum orthophosphate, antimony trioxide, antimony tetroxide, barium oxide, barium carbonate, barium molybdate, bismuth oxybromide, bismuth oxychloride, bismuth oxyfluoride, calcium aluminate, calcium hydride, calcium peroxide, calcium trialuminate, calcium triorthophoshate, calcium tungstate, hafnium oxide, lanthanum oxide, magnesium carbonate, magnesium oxide, strontium peroxide, tin dichloride, zinc oxide, zirconium tetrachloride, and zirconium tetraflouride is an additive to said pre-formed reflector.

33. (Previously presented) The scintillator assembly of claim 1, in which one or a plurality of high-Z, high-density materials from the group consisting of bismuth, bismuth oxychloride, bismuth oxyflouride, gold, hafnium, hafnium oxide,

iridium, lanthanum, lanthanum oxide, lead, lead oxide, osmium, platinum, platinum phosphide, rhenium, tantalum, tungsten, and other inorganic compounds of heavy metals is an additive to the reflector assembly of a pre-formed said pre-formed reflector.

34. (Previously presented) The scintillator assembly of claim 1, in which one or a plurality of scintillating materials from the group consisting of barium fluoride, cerium-activated bismuth germanium oxide (EGO), cadmium tungstate, sodium-doped cesium iodide, thallium-doped cesium iodide, cerium fluoride, europium-doped calcium fluoride, terbium-activated glass, europium-doped lithium, cerium-activated lithium glass, cerium-activated gadolinium silicate (GSO), lanthanum bromide, lanthanum chloride, thallium-doped sodium iodide, cerium-activated yttrium aluminum garnet (YAG), cerium-activated yttrium aluminum perovskite (YAP), cerium-activated lutetium orthoaluminate (LuAP), cerium-activated lutetium orthosilicate (LSO) and organic scintillators is an additive to said pre-formed reflector.

35. (Previously presented) The scintillator assembly of claim 1, in which one or a plurality of organic optical brightening agents is an additive to the reflector assembly of a said pre-

formed reflector.

36. (Previously presented) The scintillator assembly of claim 1, in which said preformed reflector is formed by injection molding.

37. (Previously Presented) A method, comprising:

pre-forming a reflector array having plural individual pixels from polyethylene, each of a specified shape having specified shaped inner surfaces; and

attaching said reflector to an array of scintillator material formed of separated pixels of scintillator material that define a two-dimensional array, and that are held together by a bridging portion between individual elements of said two-dimensional array, said bridging portion formed of uncut scintillator material, each of said separated pixels shaped to fit within one of said individual pixels of said reflector array, and wherein said attaching comprises holding said two dimensional array to said reflector using said bridging portion that is between said separated pixels to hold each of said pixels relative to said reflector, and wherein said bridging portion has specified surfaces that hold said array two dimensionally within said pre-formed reflector.

38. (Original) A method as in claim 37, wherein said attaching comprises using pressure of an outer surface of said scintillator material against a pressure of an inner surface of said reflector to hold said scintillator material within said reflector.

39. (Original) A method as in claim 37, further comprising attaching said scintillator material to said reflector by an adhesive.

40. (Previously presented) A method as in claim 37, wherein said pre-forming step comprises pre-forming a reflector having at least one opening therein.

41. (Previously presented) A method as in claim 40, wherein said at least one opening mates with an exit window on the scintillator material.

42. (Original) A method as in claim 40, wherein said at least one opening includes a light guide input to or output from the scintillator material.

43. (Previously presented) A method as in claim 37, wherein said reflector has a specified shape to hold said separated pixels of said scintillator material.

44. (Currently amended) A method, comprising:

pre-forming a reflector of a specified shape having specified shaped inner surfaces, in which said specified shape forms a tapered end part that is tapered in two separate directions;

attaching said reflector to a scintillator material of a shape that fits within said inner surfaces, wherein said shape mates with, and is held in place by, corresponding surfaces on said preformed reflector, where said taper causes said shape to vary in cross-sectional area in two directions; and

~~performing~~ forming a protrusion on at least one of said inner surfaces of said reflector, said protrusion being of a shape that forms ~~for forming~~ at least one air gap between adjacent scintillator material surfaces and the reflector.

45. (Previously presented) An assembly as in claim 1, wherein said preformed reflector has a plurality of continuous surfaces which extend from a first portion on the scintillator material near a first end thereof, to a second portion on the

scintillator material near a second opposite end thereof, and continuously extends between said first and second portions.

46. (Previously presented) A method as in claim 37, further comprising using said reflector to reflect scintillation photons back into said scintillator material.

47. (Previously presented) A method as in claim 37, wherein said forming a reflector comprises forming a plurality of continuous surfaces which extend from a first portion on the scintillator material near a first end thereof to a second portion on the scintillator material near a second opposite end thereof, and continuously extending between said first and second portions.

48. (Previously presented) An assembly as in claim 1, wherein said array of scintillator material which is held together by said bridge is a two-dimensional array.

49. (Previously presented) An assembly as in claim 48 wherein said array is a 4x4 array of scintillator material.

50. (Previously Presented) An assembly as in claim 13, wherein said first shape has a first portion at one end which is

substantially constant and rectangular in cross section, and has a second end which reduces in area between said substantially constant cross-section and an end section which forms an exit window of the scintillator material and forms a tapered end part that is tapered in two separate directions, and mates with, and is held in place by, corresponding surfaces on said preformed reflector, where said taper causes said shape to vary.

51. (Previously presented) An assembly as in claim 1, wherein said preformed reflector has, for each pixel, four completely solid walls, completely surrounding walls of said separated pixel.

52. (Previously presented) A method as in claim 37, wherein said array of scintillator material is a two-dimensional array.